A characteristic feature of all eukaryotic mRNA is present at the 5 'end known as a cap. It is consists of 7-methyloguanosine connected to the next nucleotide via unusual 5',5'-triphosphate bridge (m^7GpppN, where N nucleotide any other piece). The key role of the cap is its participation in the process of translation initiation. This process occurs when the structure of the 5 'end of the mRNA is recognized by a protein eIF4E (eukaryotic initiation factor 4E). For many years, it is a known that abnormal growth of cells is usually accompanied by increased levels of factor eIF4E. On the other hand, overexpression of eIF4E results in acceleration of cell growth and initiation of the process of carcinogenesis. Observations of the relationship between the level of the eIF4E and carcinogenesis is the basis for the development of such compounds that are able to inhibit the activity of eIF4E in cells undergoing uncontrolled proliferation. Unfortunately, all previously received cap analogues cannot be applied in vivo, as a result of the presence of electric charge which prevent their cell penetration. The proposed project is a continuation of research conducted for several years which is aim at development of methods that will enable to overcome the problem of providing cap derivatives as potential anticancer agents.

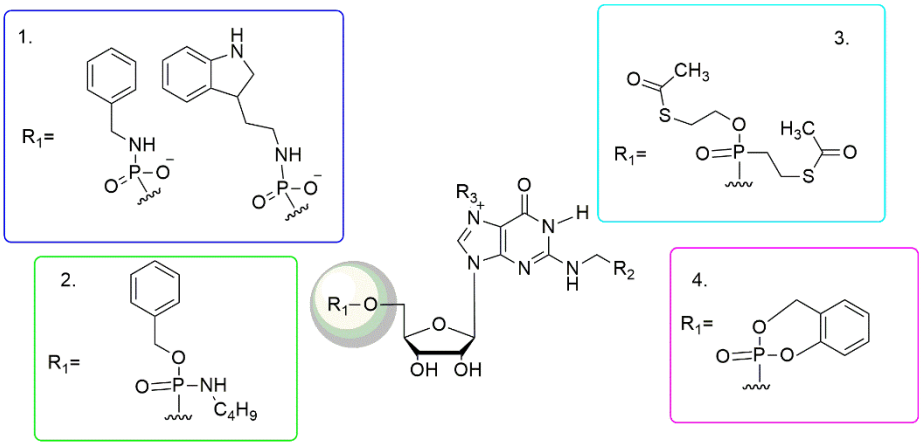

Figura 1. Exemplary pronucleotides based on the cap stucture.